INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY•PHYSICS

Volume 44, 1999

List of Contents/Author Index/Subject Index

ELSEVIER

INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY • BIOLOGY • PHYSICS

EDITOR-IN-CHIEF: JAMES D. COX

Senior Editor (Clinical): Eli Glatstein • *Senior Editor (Biology):* Eric J. Hall

Senior Editor (Physics): James A. Purdy

Founding Editor: Philip Rubin

EDITORIAL BOARD

Ross A. Abrams
Kie-Kian Ang
Giorgio Arcangeli
Samy Ahmed El-Badawy
Harry Bartelink
Adrian Begg
Hijad Bilge
Anders Brahme
Roger W. Byhardt
Felipe A. Calvo
J. Robert Cassady
John D. Chapman
George T. Y. Chen
C. Norman Coleman
Louis S. Constine
Jay S. Cooper
Bernard J. Cummings
Walter J. Curran, Jr.
Anthony V. D'Amico
Lawrence W. Davis
Mark W. Dewhirst
Sarah S. Donaldson
Ralph E. Durand
Patricia J. Eifel
Bahman Emami
Francois Eschwege
John Flickinger
Arlene A. Forastiere
Barbara L. Fowble
Carolyn R. Freeman
James Freyer
Armando Gaitan
Adam Garden
Laurie Gaspar
Fady Geara
Jean-Pierre Gerard
Edward L. Gillette
Michael T. Gillin
Robert J. Ginsberg
Guillermo J. Gonzalez
Mary Gospodarowicz
Perry W. Grigsby
Leonard L. Gunderson
Chul Soo Ha
Edward C. Halperin
Elizabeth H. Hammond
Gerald E. Hanks
Jay R. Harris
Louis B. Harrison
Richard P. Hill
Waun Ki Hong
Richard T. Hoppe
Jean-Claude Horiot
Michael R. Horsman
Alan Horwich
Guo-Liang Jiang
David H. Johnson
Eric E. Klein
H. Dieter Kogelnik
Ritsuko Komaki
Larry E. Kun
Allan O. Langlands
George E. Laramore
David A. Larson
Theodore S. Lawrence
Anne W. M. Lee
Steven A. Leibel
C. Clifton Ling
Jay S. Loeffler
Moshe H. Maor
Anthony Mancuso
James E. Marks
Mary K. Martel
James Martenson, Jr.
Peter M. Mauch
Jean-Jacques Mazeron
William H. McBride
W. Gillies McKenna
Nancy Price Mendenhall
William M. Mendenhall
Jeff Michalski
Luka Milas
Bruce D. Minsky
James B. Mitchell
Kozo Morita
Diana F. Nelson
Dattatreyudu Nori
James R. Oleson
Jens Overgaard
David Otim-Oyet
Thomas F. Pajak
Charn Il Park
James T. Parsons
Lester J. Peters
Alan Pollack
A. Michael Rauth
Abram Recht
Mack Roach III
Marvin Rotman
James E. Ruffer
Anthony H. Russell
Horst Sack
Stephen A. Sapareto
William T. Sause
Pierre Scalliet
Paul F. Schellhammer
Timothy E. Schultheiss
Christopher Schultz
Edward G. Shaw
David S. Shimm
William U. Shipley
Lawrence Solin
Chang W. Song
Luis Souhami
Burton L. Speiser
Craig W. Stevens
Fiona Stewart
Judith Stitt
Joel E. Tepper
Howard Thames
Elizabeth L. Travis
Andy Trotti
Susan L. Tucker
Ingela Turesson
Andrew Turrisi, III
Fatih M. Uckun
Riccardo Valdagni
Paul Van Houtte
Peter W. Vaupel
Raul V. Vera
Lynn J. Verhey
Bhadrasain Vikram
Everett E. Vokes
Kent Wallner
Todd H. Wasserman
Yin Wei-Bo
Ralph R. Weischselbaum
Moody D. Wharam, Jr.
Richard Whittington
J. Frank Wilson
David P. Winchester
H. Rodney Withers
Robert Wittes
Shiao Woo
S. P. Yarmonenko
Zhang Zhiyi

ADVISORY BOARD

Hassan Awwad
Norman Bleehen
Luther W. Brady
David G. Bragg
Bruce Chabner
Juan A. del Regato
Juliana Denekamp
Jerzy Einhorn
Jack F. Fowler
Zvi Y. Fuks
John H. Glick
Michael Goitein
Lars R. Holsti
Morton M. Kligerman
Seymour H. Levitt
Bo Littbrand
Carl M. Mansfield
Karin Mattson
Stanley E. Order
Colin G. Orton
Carlos A. Perez
Theodore L. Phillips
Leonard R. Prosnitz
Robert H. Sagerman
Dietmar W. Siemann
Herman Suit
Liu Tai-fu
Maurice Tubiana
Mayer Zaharia
Gu Xian Zhi

Editorial Office
Administrative Editor: Beth Notzon
Editorial Secretary: Deborah J. Walker
Editorial Assistant: Robert J. Nagle
Scientific Publications-227
The University of Texas M. D. Anderson Cancer Center
1515 Holcombe Blvd.
Houston, TX 77030

Int. J. Radiation Oncology Biol. Phys., Vol. 44, No. 5, pp. 1195–1205, 1999
Copyright © 1999 Elsevier Science Inc.
Printed in the USA. All rights reserved
PII S0360-3016(99)

INTERNATIONAL JOURNAL OF
RADIATION ONCOLOGY BIOLOGY·PHYSICS

VOLUME 44, NUMBER 1 APRIL 1, 1999

TABLE OF CONTENTS

CRITICAL REVIEW

1 **Bone Metastasis: Review and Critical Analysis of Random Allocation Trials of Local Field Treatment**
V. Ratanatharathorn, W. E. Powers, W. T. Moss, and C. A. Perez

CLINICAL INVESTIGATIONS

LYMPHOMA

19 **Apoptosis and the *BCL-2* Gene Family—Patterns of Expression and Prognostic Value in Stage I and II Follicular Center Lymphoma**
M. D. Logsdon, R. E. Meyn, Jr., P. C. Besa, W. C. Pugh, L. C. Stephens, L. J. Peters, L. Milas, J. D. Cox, F. Cabanillas, S. Brisbay, M. Andersen, and T. J. McDonnell

31 **Radiotherapy in the Management of Orbital Lymphoma**
T. W. Bolek, H. M. Moyses, R. B. Marcus, Jr., L. Gorden, III, R. L. Maiese, N. M. Almasri, and N. P. Mendenhall

FEMALE GENITALIA

37 **Factors Affecting Long-Term Outcome of Irradiation in Carcinoma of the Vagina**
C. A. Perez, P. W. Grigsby, M. Garipagaoglu, D. G. Mutch, and M. A. Lockett

47 **Impact of Radiotherapy on Local Control and Survival in Uterine Sarcomas: A Retrospective Study From The Grup Oncologic Català-Occità**
F. Ferrer, S. Sabater, B. Farrús, F. Guedea, A. Rovirosa, L. Anglada, M. Delannes, S. Marín, J.-B. DuBois, and N. Daly-Schveitzer

53 **Anatomic Study of the Pelvis in Carcinoma of the Uterine Cervix as Related to the Box Technique**
S. Zunino, O. Rosato, S. Lucino, E. Jauregui, L. Rossi, and D. Venencia

61 **Pelvic Insufficiency Fractures in Patients With Pelvic Irradiation**
A. Moreno, J. Clemente, C. Crespo, A. Martínez, M. Navarro, L. Fernández, J. Minguell, G. Vázquez, and F. J. Andreu

CENTRAL NERVOUS SYSTEM

67 **A Multi-institutional Analysis of Complication Outcomes After Arteriovenous Malformation Radiosurgery**
J. C. Flickinger, D. Kondziolka, L. D. Lunsford, B. E. Pollock, M. Yamamoto, D. A. Gorman, P. J. Schomberg, P. Sneed, D. Larson, V. Smith, M. W. McDermott, L. Miyawaki, J. Chilton, R. A. Morantz, B. Young, H. Jokura, and R. Liscak

75 **Fractionated External-Beam Radiation Therapy for Meningiomas of the Cavernous Sinus**
P. D. Maguire, R. Clough, A. H. Friedman, and E. C. Halperin

81 **The Cranial-Spinal Junction in Medulloblastoma: Does It Matter?**
A. Narayana, S. Jeswani, and A. C. Paulino

85 **Late Radiation Injury Following Hyperfractionated Craniospinal Radiotherapy for Primitive Neuroectodermal Tumor**
C. Russo, N. Fischbein, E. Grant, and M. D. Prados

BREAST

91 Assessing the Cost-Effectiveness of Postmastectomy Radiation Therapy
L. B. Marks, P. H. Hardenbergh, E. T. Winer, and L. R. Prosnitz

99 Does the Dose Fractionation Schedule Influence Local Control of Adjuvant Radiotherapy for Early Stage Breast Cancer?
Y. Yamada, I. Ackerman, E. Franssen, R. G. MacKenzie, and G. Thomas

105 Local-Regional Control of Recurrent Breast Carcinoma After Mastectomy: Does Hyperfractionated Accelerated Radiotherapy Improve Local Control?
M. T. Ballo, E. A. Strom, H. Prost, S. E. Singletary, R. L. Theriault, T. A. Buchholz, and M. D. McNeese

113 Nine Breast Angiosarcomas After Conservative Treatment for Breast Carcinoma: A Survey From French Comprehensive Cancer Centers
C. Marchal, B. Weber, B. de Lafontan, M. Resbeut, H. Mignotte, P. P. du Chatelard, B. Cutuli, M. Reme-Saumon, A. Broussier-Leroux, G. Chaplain, F. Lesaunier, J.-M. Dilhuydy, and J. L. Lagrange

GASTROINTESTINAL

121 Radiotherapy and Multimodality Management of Cholangiocarcinoma
M. Urego, J. C. Flickinger, and B. I. Carr

127 The Significance of Pretreatment CD4 Count on the Outcome and Treatment Tolerance of HIV-Positive Patients With Anal Cancer
R. Hoffman, M. L. Welton, B. Klencke, V. Weinberg, and R. Krieg

133 Radioimmunoguided-Intraoperative Radiation Therapy in Colorectal Carcinoma: A New Technique to Precisely Define the Clinical Target Volume
S. Nag, R. Martinez-Monge, C. Nieroda, and E. Martin, Jr.

HEAD AND NECK

139 Chemotherapy Alternated With Radiotherapy in the Treatment of Advanced Head and Neck Carcinoma: Predictive Factors of Outcome
G. Sanguineti, R. Corvò, M. P. Sormani, M. Benasso, G. Numico, A. Bacigalupo, R. Rosso, and V. Vitale

149 Recurrent Nasopharyngeal Carcinoma: The Puzzles of Long Latency
A. W. M. Lee, W. Foo, S. C. K. Law, Y. F. Poon, W. M. Sze, S. K. O, S. Y. Tung, R. Chappell, W. H. Lau, and J. H. C. Ho

LUNG

157 National Survey on Prophylactic Cranial Irradiation: Differences in Practice Patterns Between Medical and Radiation Oncologists
A. J. Cmelak, H. Choy, Y. Shyr, P. Mohr, M. J. Glantz, and D. H. Johnson

BIOLOGY CONTRIBUTIONS

163 High-Dose Preoperative Radiotherapy Does Not Alter the Strength of Unilaterally Irradiated Colon Anastomoses in Rats
G. De Meerleer, P. Pattyn, L. Fortan, N. De Wever, C. Cuvelier, K. Van Renterghem, F. Berrevoet, and W. De Neve

171 Late Pathologic Changes in Guinea Pig Kidneys Irradiated With Conventional Fractionation and Hyperfractionation
T. Inomata, S. Itoh, S. Kariya, K. Mesaki, A. Nishioka, Y. Ogawa, S. Yoshida, H. Sonobe, and Y. Ohtsuki

179 Beneficial Effects of the Radioprotectant 21-Aminosteroid U-74389G in a Radiosurgery Rat Malignant Glioma Model
D. Kondziolka, Y. Mori, A. J. Martinez, M. R. McLaughlin, J. C. Flickinger, and L. D. Lunsford

185 Comparison of Radiosensitization by 41°C Hyperthermia During Low Dose Rate Irradiation and During Pulsed Simulated Low Dose Rate Irradiation in Human Glioma Cells
G. P. Raaphorst, C. E. Ng, and B. Shahine

189 Hepatic Tumor Radioembolization in a Rat Model Using Radioactive Rhenium (^{186}RE/^{188}RE) Glass Microspheres
U. O. Häfeli, S. Casillas, D. W. Dietz, G. J. Pauer, L. A. Rybicki, S. D. Conzone, and D. E. Day

PHYSICS CONTRIBUTIONS

201 Biophysical Characteristics of HIMAC Clinical Irradiation System for Heavy-Ion Radiation Therapy
T. Kanai, M. Endo, S. Minohara, N. Miyahara, H. Koyama-Ito, H. Tomura, N. Matsufuji, Y. Futami, A. Fukumura, T. Hiraoka, Y. Furusawa, K. Ando, M. Suzuki, F. Soga, and K. Kawachi

211 **The Use and Advantages of a Multichannel Vaginal Cylinder in High-Dose-Rate Brachytherapy**
D. J. Demanes, S. Rege, R. R. Rodriquez, K. L. Schutz, G. A. Altieri, and T. Wong

221 **External Radiation Therapy Boost to the Vaginal Vault: Feasibility of Intracavitary Dosimetry Using a Commercial Diode System**
N. Settineri, S. Pergolizzi, L. Raffaele, R. Maisano, and E. G. Russi

227 **Cochlear Implants: Response to Therapeutic Irradiation**
A. Ralston, G. Stevens, E. Mahomudally, I. Ibrahim, and E. Leckie

233 **Meetings and News Notes**

VII **Advertising Index**

VIII **Direct Response**

VOLUME 44, NUMBER 2 MAY 1, 1999

EDITORIAL

237 **The Emergence of Conformal Radiotherapy: Special Implications for Pediatric Neuro-Oncology**
J. S. Loeffler, H. M. Kooy, and N. J. Tarbell

239 **Radiation Oncology in China: The Third Survey of Personnel and Equipment in Radiation Oncology**
Y. Weibo, T. Fenghua, and G. Xianzhi

CLINICAL INVESTIGATIONS

BRAIN

243 **Fractionated Stereotactic Radiotherapy (FSRT) for Optic Glioma**
J. Debus, K. O. Kocagöncü, A. Höss, F. Wenz, and M. Wannenmacher

249 **Pediatric Choroid Plexus Neoplasms**
E. Chow, D. A. Reardon, A. B. Shah, J. J. Jenkins, J. Langston, R. L. Heideman, R. A. Sanford, L. E. Kun, and T. E. Merchant

255 **The Role of Radiation Therapy in the Management of Craniopharyngioma: A 25-Year Experience and Review of the Literature**
J. L. Habrand, O. Ganry, D. Couanet, V. Rouxel, C. Levy-Piedbois, A. Pierre-Kahn, and C. Kalifa

265 **Primary Central Nervous System Lymphoma in Japan: A Nationwide Survey**
N. Hayabuchi, Y. Shibamoto, Y. Onizuka, and JASTRO CNS Lymphoma Study Group Members

BREAST

273 **The Importance of Local-Regional Radiotherapy with Conventional or High-Dose Chemotherapy in the Management of Breast Cancer Patients with ≥ 10 Positive Axillary Nodes**
G. Jabro, D. E. Wazer, R. Ruthazer, R. Lum, N. Sklar, D. Goldman, D. Enegess, and J. Erban

281 **Incidence and Time of Occurrence of Regional Recurrence in Stage I-II Breast Cancer: Value of Adjuvant Irradiation**
J. Fodor, J. Tóth, T. Major, C. Polgár, and G. Németh

289 **Accelerated Superfractionated Radiotherapy for Inflammatory Breast Carcinoma: Complete Response Predicts Outcome and Allows for Breast Conservation**
D. W. Arthur, R. K. Schmidt-Ullrich, R. B. Friedman, D. E. Wazer, L. A. Kachnic, C. Amir, H. D. Bear, M. H. Hackney, T. J. Smith, and W. Lawrence, Jr.

CERVIX

297 **Relationship Between p21/WAF-1/CIP-1 and Apoptosis in Cervical Cancer During Radiation Therapy**
Y. Niibe, T. Nakano, T. Ohno, H. Tsujii, and K. Oka

HEAD AND NECK

305 **Computed Tomography Findings of Bony Regeneration After Radiotherapy for Nasopharyngeal Carcinoma with Skull Base Destruction: Implications for Local Control**
F.-M. Fang, S. W. Leung, C.-J. Wang, C.-Y. Su, C.-C. Lui, H.-C. Chen, L.-M. Sun, and T.-M. Lin

311 **A Phase I Trial of 96-Hour Paclitaxel Infusion Plus Accelerated Radiotherapy for Unresectable Head and Neck Cancer**
M. Machtay, V. Aviles, M. M. Kligerman, J. Treat, G. S. Weinstein, R. S. Weber, N. Mirza, A. A. Chalian, and D. I. Rosenthal

PROSTATE

317 **The Utility of Serial Complete Blood Count Monitoring in Patients Receiving Radiation Therapy for Localized Prostate Cancer**
K. R. Blank, M. A. Cascardi, and G. D. Kao

323 **Follow-up Costs After External Radiation for Low Risk Prostate Cancer**
K. Tralins and K. Wallner

LUNG

327 **Interfraction Interval Does Not Affect Survival of Patients With Non-Small Cell Lung Cancer Treated With Chemotherapy and/or Hyperfractionated Radiotherapy: A Multivariate Analysis of 1076 RTOG Patients**
M. Werner-Wasik, C. Scott, M. L. Graham, C. Smith, R. W. Byhardt, M. Roach III, and E. J. Andras

333 **Radiotherapy for Lung Cancer: Target Splitting by Asymmetric Collimation Enables Reduction of Radiation Doses to Normal Tissues and Dose Escalation**
K. Wurstbauer, H. Deutschmann, M. Kranzinger, F. Merz, H. Rahim, F. Sedlmayer, and H. D. Kogelnik

343 **A Phase II Study of Concurrent Accelerated Hyperfractionated Radiotherapy and Carboplatin/Oral Etoposide for Elderly Patients With Stage III Non-Small-Cell Lung Cancer**
B. Jeremic, Y. Shibamoto, B. Milicic, S. Milisavljevic, N. Nikolic, A. Dagovic, J. Aleksandrovic, and G. Radosavljevic-Asic

PHASE I TRIAL

349 **Phase I Trial of the Hypoxic Cell Cytotoxin Tirapazamine With Concurrent Radiation Therapy in the Treatment of Refractory Solid Tumors**
L. N. Shulman, L. Buswell, N. Riese, N. Doherty, J. S. Loeffler, R. W. von Roemeling, and C. N. Coleman

RADIATION ONCOLOGY PRACTICE

355 **Changes in the Use of Radiotherapy in Ontario 1984–1995**
W. J. Mackillop, S. Zhou, P. Groome, P. Dixon, B. J. Cummings, C. Hayter, and L. Paszat

BENIGN DISEASE

363 **Feasibility of External Beam Radiation for Prevention of Restenosis Following Balloon Angioplasty**
M. Razavi, S. Rege, W. Zeigler, K. Mather, C. Shen, J. Smathers, A. Gomes, and R. Withers

BIOLOGY CONTRIBUTIONS

369 **The Delta-TCP Concept: A Clinically Useful Measure of Tumor Control Probability**
B. Sanchez-Nieto and A. E. Nahum

381 **Bed-Time Charts and Their Application to the Problems of Interruptions in External Beam Radiotherapy Treatments**
J. A. Sinclair, J. P. Oates, and R. G. Dale

391 **Reoxygenation in Quiescent and Total Intratumor Cells Following Thermal Neutron Irradiation With or Without ^{10}B-Compound—Compared With That After γ-Ray Irradiation**
S.-I. Masunaga, K. Ono, M. Suzuki, Y. Sakurai, T. Kobayashi, M. Takagaki, Y. Kinashi, and M. Akaboshi

399 **Radiopotentiation by The Oral Platinum Agent, JM216: Role of Repair Inhibition**
G. P. Amorino, M. L. Freeman, D. P. Carbone, D. E. Lebwohl, and H. Choy

407 **Hyperthermia Enhances the Response of Paclitaxel and Radiation in a Mouse Adenocarcinoma**
A. Cividalli, G. Cruciani, E. Livdi, P. Pasqualetti, and D. T. Danesi

413 **Association of Increased Radiocurability of Murine Carcinomas With Low Constitutive Expression of P21$^{WAF1/CIP1}$ Protein**
T. Akimoto, J. Seong, N. R. Hunter, L. Buchmiller, K. Mason, and L. Milas

PHYSICS CONTRIBUTIONS

421 **Assessment of the Uncertainties in Dose Delivery of a Commercial System for Linac-Based Stereotactic Radiosurgery**
D. Verellen, N. Linthout, A. Bel, G. Soete, D. Van den Berge, J. D'Haens, and G. Storme

435 **Design and Development of New Collimator Cones for Fractionated Stereotactic Radiation Therapy in Samsung Medical Center**
Y. C. Ahn, S. G. Ju, D. Y. Kim, D. R. Choi, S. J. Huh, Y. H. Park, D. H. Lim, and M. K. Kim

439 **Practical Considerations in Using Calculated Healthy-Tissue Complication Probabilities for Treatment-Plan Optimization**
M. Zaider and H. I. Amols

449 **Beam Intensity Modulation for Penumbra Enhancement in the Treatment of Lung Cancer**
M. L. P. Dirkx, M. Essers, J. R. van Sörnsen de Koste, S. Senan, and B. J. M. Heijmen

455 **A Method of Estimating Fetal Dose During Brain Radiation Therapy**
M. Mazonakis, J. Damilakis, H. Varveris, N. Theoharopoulos, and N. Gourtsoyiannis

461 **Inhomogeneous Target-Dose Distributions: A Dimension More for Optimization?**
W. R. T. De Gersem, S. Deryche, C. O. Colle, C. De Wagter, and W. J. De Neve

LETTERS TO THE EDITOR

469 **Regarding Kubo, Coursey, Hanson *et al.*, *IJROBP* 1998;40:697–702**
R. Nath, D. Beyer, J. Friedland, P. Grimm, and S. Nag

469 **Response to the Comments by Nath, Beyer *et al.* on the *IJROBP* 1998;40:697-702 Article by Kubo et al.**
D. Kubo, and J. F. Williamson

470 **The Slope of the Sigmoid Dose Response Curve for Tumor Control**
R. J. Yaes

472 **Regarding Grado *et al. IJROBP* 1998;42:289–298**
B. Vikram

473 **Meetings & News Notes**

VI **Advertising Index**

VII **Direct Response**

VOLUME 44, NUMBER 3 JUNE 1, 1999

EDITORIAL

477 **Predicting and Overcoming the Radioresistance of Individual Tumors**
J. D. Chapman and P. R. Anderson

481 **Observation Versus Early Stereotactic Radiotherapy of Acoustic Neuroma: What Are You Waiting For?**
J. C. Flickinger

CRITICAL REVIEWS

483 **A Comprehensive Review of Prostate Cancer Brachytherapy: Defining an Optimal Technique**
F. A. Vicini, V. R. Kini, G. Edmundson, G. S. Gustafson, J. Stromberg, and A. Martinez

493 **Randomized Trials on Radioactive Iodine Ablation of Thyroid Remnants for Thyroid Carcinoma—A Critique**
D. E. Roos and J. G. Smith

CLINICAL INVESTIGATIONS

FEMALE GENITAL

497 **Psychoeducational Group Increases Vaginal Dilation for Younger Women and Reduces Sexual Fears for Women of All Ages With Gynecological Carcinoma Treated With Radiotherapy**
J. W. Robinson, P. D. Faris, and C. B. Scott

507 **A High Ratio of Apoptosis to Proliferation Correlates With Improved Survival After Radiotherapy for Cervical Adenocarcinoma**
M. T. Sheridan, R. A. Cooper, and C. M. L. West

513 **Irradiation With or Without Misonidazole for Patients With Stages IIIB and IVA Carcinoma of the Cervix: Final Results of RTOG 80-05**
P. W. Grigsby, K. Winter, T. H. Wasserman, V. Marcial, M. Rotman, J. Cooper, H. Keys, S. O. Asbell, and T. L. Phillips

519 **Accelerated Hyperfractionated Radiotherapy for Locally Advanced Cervix Cancer**
C. MacLeod, D. Bernshaw, S. Leung, K. Narayan, and I. Firth

PROSTATE

525 **Evaluating the Effect of Rectal Distension and Rectal Movement on Prostate Gland Position Using Cine MRI**
A. R. Padhani, V. S. Khoo, J. Suckling, J. E. Husband, M. O. Leach, and D. P. Dearnaley

CENTRAL NERVOUS SYSTEM

535 **The Effects of Sequential Versus Concurrent Chemotherapy and Radiotherapy on Survival and Toxicity in Patients With Newly Diagnosed High-Grade Astrocytoma**
L. Kleinberg, S. A. Grossman, S. Piantadosi, M. Zeltzman, and M. Wharam

545 **Comparison Between Observation Policy and Fractionated Stereotactic Radiotherapy (SRT) As an Initial Management for Vestibular Schwannoma**
H. Shirato, T. Sakamoto Y. Sawamura, K. Kagei, T. Isu, T. Kato, S. Fukuda, K. Suzuki, S. Soma, Y. Inuyama, and K. Miyasaka

HODGKIN'S DISEASE

551 **The Optimal Dose of Radiation in Hodgkin's Disease: An Analysis of Clinical and Treatment Factors Affecting In-Field Disease Control**
N. P. Mendenhall, L. L. Rodrigue, G. J. Moore-Higgs, R. B. Marcus, Jr, and R. R. Million

MALIGNANT LYMPHOMA

563 **The Impact of Radiotherapy Dose and Other Treatment-Related and Clinical Factors on In-Field Control in Stage I and II Non-Hodgkin's Lymphoma**
S. S. Kamath, R. B. Marcus, Jr, J. W. Lynch, and N. P. Mendenhall

PEDIATRIC TUMORS

569 **Radiation Therapy for Consolidation of Metastatic or Recurrent Sarcomas in Children Treated With Intensive Chemotherapy and Stem Cell Rescue. A Feasibility Study**
E. A. D. Czyzewski, S. Goldman, A. J. Mundt, J. Nachman, C. Rubin, and D. E. Hallahan

579 **Significance and Management of Computed Tomography Detected Pulmonary Nodules: A Report From The National Wilms Tumor Study Group**
J. A. Meisel, K. A. Guthrie, N. E. Breslow, S. S. Donaldson, and D. M. Green

587 **Anesthesia for Pediatric External Beam Radiation Therapy**
J. T. Fortney, E. C. Halperin, C. M. Hertz, and S. R. Schulman

LUNG

593 **^{18}F-Deoxyglucose Positron Emission Tomography (FDG-PET) for the Planning of Radiotherapy in Lung Cancer: High Impact in Patients With Atelectasis**
U. Nestle, K. Walter, S. Schmidt, N. Licht, C. Nieder, B. Motaref, D. Hellwig, M. Niewald, D. Ukena, C. M. Kirsch, G. W. Sybrecht, and K. Schnabel

NORMAL TISSUE

599 **Late Retinal Complications of Radiation Therapy for Nasal and Paranasal Malignancies: Relationship Between Irradiated-Dose Area and Severity**
A. Takeda, N. Shigematsu, S. Suzuki, M. Fujii, T. Kawata, O. Kawaguchi, T. Uno, H. Takano, A. Kubo, and H. Ito

PALLIATION/SUPPORTIVE CARE

607 **Palliative Radiotherapy for Recurrent and Metastatic Malignant Melanoma: Prognostic Factors for Tumor Response and Long-Term Outcome: A 20-Year Experience**
M. H. Seegenschmiedt, L. Keilholz, A. Altendorf-Hofmann, A. Urban, H. Schell, W. Hohenberger, and R. Sauer

619 **Radiation-Induced Emesis: A Prospective Observational Multicenter Italian Trial**
The Italian Group for Antiemetic Research in Radiotherapy

RADIATION ONCOLOGY PRACTICE

627 **Hiring of Radiation Oncologists by Physician Groups in 1997**
S. D. Elliott and J. H. Sunshine

BIOLOGY CONTRIBUTIONS

633 **Fibrocellular Tissue Responses to Endovascular and External Beam Irradiation in the Porcine Model of Restenosis**
M. M. H. Marijianowski, I. R. Crocker, T. Styles, D. M. Forestner, R. Waksman, G. D. Cipolla, S. B. King, III, and K. A. Robinson

643 **The Effect of External Electron Beam on Neointima in Rat Carotid Artery Injury Model**
Y.-T. Oh, H.-S. Kim, M. Chun, H. Kang, M.-H. Yoon, J.-S. Kim, S. H. Kang, C.-W. Joh, Y.-M. Kim, B.-I. Choi, K. B. Park, and C. H. Park

649 **Characterization and Validation of Noninvasive Oxygen Tension Measurements in Human Glioma Xenografts by ^{19}F-MR Relaxometry**
B. P. J. van der Sanden, A. Heerschap, A. W. Simonetti, P. F. J. W. Rijken, H. P. W. Peters, G. Stüben, and A. J. van der Kogel

659 **Radiation Enhancement by 9-Aminocamptothecin: The Effect of Fractionation and Timing of Administration**
A. V. Kirichenko and T. A. Rich

665 **A Model to Accumulate Fractionated Dose in a Deforming Organ**
D. Yan, D. A. Jaffray, and J. W. Wong

677 **p53 Mutation Decreased Radiosensitivity in Rat Yolk Sac Tumor Cell Lines**
K. Maebayashi, N. Mitsuhashi, T. Takahashi, H. Sakurai, and H. Niibe

683 **Radiosensitivity of Human Normal and Tumoral Thyroid Cells Using Fluorescence *In Situ* Hybridization and Clonogenic Survival Assay**
A. Gaussen, J.-D. Legal, N. Beron-Gaillard, A. Laplanche, J.-P. Travagli, B. Caillou, and C. Parmentier

PHYSICS CONTRIBUTIONS

693 **Volumetric Visualization of Head and Neck CT Data for Treatment Planning**
J. S. Lee, A. B. Jani, C. A. Pelizzari, D. J. Haraf, E. E. Vokes, R. R. Weichselbaum, and G. T. Y. Chen

705 **Technology Assessment of Multileaf Collimation: A North American Users Survey**
E. E. Klein, J. Tepper, M. Sontag, M. Franklin, C. Ling, and D. Kubo

711 **Comparison of Computer Workstation With Light Box for Detecting Setup Errors From Portal Images**
A. A. Boxwala, E. L. Chaney, D. S. Fritsch, S. Raghavan, C. S. Coffey, S. A. Major, and K. E. Muller

717 **Potential Role of Various Dosimetric Quality Indicators in Prostate Brachytherapy**
G. S. Merrick, W. M. Butler, A. T. Dorsey, and J. H. Lief

725 **Effect of Metal Reconstruction Plates on Cobalt-60 Dose Distribution: A Predictive Formula and Clinical Implications**
E. Melian, M. Fatyga, P. Lam, M. Steinberg, S. P. Reddy, G. J. Petruzzelli, and G. P. Glasgow

731 **Stereolithographic Modelling As an Aid to Orbital Brachytherapy**
M. Poulsen, C. Lindsay, T. Sullivan, and P. D'Urso

LETTERS TO THE EDITOR

737 **Total Body Irradiation**
C.-S. Chui

737 **Regarding Two Papers From the Same Group on Radiotherapy for Macular Degeneration**
D. E. Roos and J. G. Smith

737 **Concerning Roberts and Hendry IJROBP 1998; 41:689–699**
F. M. Buffa, J. D. Fenwick, and A. E. Nahum

741 **Meetings & News Notes**

IX **Advertising Index**

X **Direct Response**

VOLUME 44, NUMBER 4 JULY 1, 1999

EDITORIAL

747 **What Is the α/β Ratio for Prostate Cancer? Rationale for Hypofractionated High-Dose-Rate Brachytherapy**
G. M. Duchesne and L. J. Peters

CLINICAL INVESTIGATIONS

HEAD & NECK

749 **Influence of the Hypoxic Subvolume on the Survival of Patients With Head and Neck Cancer**
P. Stadler, A. Becker, H. J. Feldmann, G. Hänsgen, J. Dunst, F. Würschmidt, and M. Molls

755 **Value of Computed Tomography as Outcome Predictor of Supraglottic Squamous Cell Carcinoma Treated by Definitive Radiation Therapy**
R. Hermans, W. Van den Bogaert, A. Rijnders, and A. L. Baert

767 **Interstitial Brachytherapy for Stage I and II Squamous Cell Carcinoma of the Oral Tongue: Factors Influencing Local Control and Soft Tissue Complications**
M. Fujita, Y. Hirokawa, K. Kashiwado, Y. Akagi, K. Kashimoto, H. Kiriu, K. Matsuura, and K. Ito

777 **Carcinoma of the External Auditory Canal and Middle Ear**
L. Pfreundner, K. Schwager, J. Willner, K. Baier, K. Bratengeier, F. X. Brunner, and M. Flentje

PROSTATE

789 **American Brachytherapy Society (ABS) Recommendations for Transperineal Permanent Brachytherapy of Prostate Cancer**
S. Nag, D. Beyer, J. Friedland, P. Grimm, and R. Nath

801 **Intraoperative Optimized Inverse Planning for Prostate Brachytherapy: Early Experience**
E. M. Messing, J. B. Y. Zhang, D. J. Rubens, R. A. Brasacchio, J. G. Strang, A. Soni, M. C. Schell, P. G. Okunieff, and Y. Yu

809 **Conventional External-Beam Radiation Therapy Alone or With Androgen Ablation for Clinical Stage III (T3, NX/N0, M0) Adenocarcinoma of the Prostate**
G. K. Zagars, A. Pollack, and L. G. Smith

BREAST

821 **Radiation Therapy and Patient Age in the Survival from Early-stage Breast Cancer**
S. A. Joslyn

827 **Quality Control in Health Care: An Experiment in Radiotherapy Planning for Breast Cancer Patients After Mastectomy**
K. Holli, P. Laippala, A. Ojala, and M. Pitkänen

RECTUM

835 **Rectal Cancer and Inflammatory Bowel Disease: Natural History and Implications for Radiation Therapy**
S. Green, R. G. Stock, and A. J. Greenstein

841 **Conservative Management of Rectal Cancer With Local Excision and Postoperative Adjuvant Therapy**
R. Wagman, B. D. Minsky, A. M. Cohen, L. Saltz, P. B. Paty, and J. G. Guillem

LUNG

847 **Is Prolonged Survival Possible for Patients With Supraclavicular Node Metastases in Non–Small Cell Lung Cancer Treated With Chemoradiotherapy?: Analysis of the Radiation Therapy Oncology Group Experience**
M. Machtay, W. Seiferheld, R. Komaki, J. D. Cox, W. T. Sause, and R. W. Byhardt

CERVIX

855 **Radiation Therapy Morbidity in Carcinoma of the Uterine Cervix: Dosimetric and Clinical Correlation**
C. A. Perez, P. W. Grigsby, M. A. Lockett, C. Chao, and J. Williamson

HODGKIN'S DISEASE

867 **Long-Term Follow-up of Patients Treated With Primary Radiotherapy for Supradiaphragmatic Hodgkin's Disease at St. Jude Children's Research Hospital**
A. B. Shah, M. M. Hudson, C. A. Poquette, X. Luo, J. A. Wilimas, and L. E. Kun

SOFT TISSUE

879 **Postoperative Radiotherapy in the Management of Adult Soft Tissue Sarcoma of the Extremities: Results With Two Different Total Dose, Fractionation, and Overall Treatment Time Schedules**
C. Le Péchoux, M.-C. Le Deley, S. Delaloge, E. Lartigau, C. Levy-Piedbois, S. Bonvalot, A. Le Cesne, G. Missenard, P. Terrier, D. Vanel, J. Genin, and F. Fontaine

EYE

887 **Diode-Light Transillumination for Ophthalmic Plaque Localization Around Juxtapapillary Choroidal Melanomas**
P. T. Finger, R. Iezzi, M. L. Esteveo, A. Szechter, R. B. Rosen, and A. Berson

CENTRAL NERVOUS SYSTEM

891 **Acute Central Nervous System (CNS) Toxicity of Total Body Irradiation (TBI) Measured Using Neuropsychological Testing of Attention Functions**
F. Wenz, S. Steinvorth, F. Lohr, W. Hacke, and M. Wannenmacher

BIOLOGY CONTRIBUTIONS

895 **Microvascular and Tumor Cell Alterations During Continuous Hyperfractionated Irradiation: An Electron Microscopic Investigation on the Rat R1H Rhabdomyosarcoma**
D. E. Lorke, S. Wenzel, K. Siebert, and F. Zywietz

905 **Correlation Between γ-Ray-Induced G_2 Arrest and Radioresistance in Two Human Cancer Cells**
T. Tamamoto, K. Ohnishi, A. Takahashi, X. Wang, H. Yosimura, H. Ohishi, H. Uchida, and T. Ohnishi

PHYSICS CONTRIBUTIONS

911 **The Use of Active Breathing Control (ABC) to Reduce Margin for Breathing Motion**
J. W. Wong, M. B. Sharpe, D. A. Jaffray, V. R. Kini, J. M. Robertson, J. S. Stromberg, and A. A. Martinez

921 **Static Field Intensity Modulation to Treat a Dominant Intra-Prostatic Lesion to 90 Gy Compared to Seven Field 3-Dimensional Radiotherapy**
B. Pickett, E. Vigneault, J. Kurhanewicz, L. Verhey, and M. Roach

931 **Variation of Clinical Target Volume Definition in Three-Dimensional Conformal Radiation Therapy for Prostate Cancer**
R. K. Valicenti, J. W. Sweet, W. W. Hauck, R. S. Hudes, T. Lee, A. P. Dicker, F. M. Waterman, P. R. Anne, B. W. Corn, and J. M. Galvin

937 **Impact of Collimator Leaf Width on Stereotactic Radiosurgery and 3D Conformal Radiotherapy Treatment Plans**
H. D. Kubo, R. B. Wilder, and C. T. E. Pappas

947 **A Reduction in the AAPM TG-36 Reported Peripheral Dose Distributions With Tertiary Multileaf Collimation**
S. Mutic and E. E. Klein

953 **A Quality Assurance Phantom For Three-Dimensional Radiation Treatment Planning**
T. Craig, D. Brochu, and J. Van Dyk

LETTERS TO THE EDITOR

967 **The Optimal Radiotherapy Schedule for T_1 Glottic Cancers?**
J. H. Hendry and N. J. Slevin

968 **Anorectal Dysfunction Following Irradiation for Uterine Carcinoma: Comment on Kim *et al.* IJROBP 41:835–841; 1998**
E. Yeoh and M. Horowitz

968 **In Response to Drs. Yeoh and Horowitz**
G. Eon Kim

971 **Meetings and News Notes**

VII **Ad Index**

VIII **Direct Response**

VOLUME 44, NUMBER 5 JULY 15, 1999

CRITICAL REVIEW

975 **Collagen Vascular Diseases and Radiation Therapy: A Critical Review**
B. De Naeyer, G. De Meerleer, S. Braems, L. Vakaet, and J. Huys

CLINICAL INVESTIGATIONS

NORMAL TISSUE

981 **Sequence Analysis of the *ATM* Gene in 20 Patients With RTOG Grade 3 or 4 Acute and/or Late Tissue Radiation Side Effects**
U. Oppitz, U. Bernthaler, D. Schindler, A. Sobeck, H. Hoehn, M. Platzer, A. Rosenthal, and M. Flentje

BREAST

989 **Consensus Statement on Postmastectomy Radiation Therapy**
J. R. Harris, P. Halpin-Murphy, M. McNeese, N. P. Mendenhall, M. Morrow, and N. J. Robert

991 **Radiotherapy Following Mastectomy: Indication and Contraindication of Chest Wall Irradiation**
N. Shikama, M. Oguchi, S. Sone, K. Arakawa, T. Oohata, K. Moriya, Y. Okazaki, K. Takei, S. Sasaki, and K. Gomi

997 **Internal Mammary Nodal Irradiation in Conservatively-Managed Breast Cancer Patients: Is There a Benefit?**
E. Obedian and B. G. Haffty

1005 **Patients With Early Stage Invasive Cancer With Close or Positive Margins Treated With Conservative Surgery and Radiation Have an Increased Risk of Breast Recurrence That Is Delayed by Adjuvant Systemic Therapy**
G. Freedman, B. Fowble, A. Hanlon, N. Nicolaou, D. Fein, J. Hoffman, E. Sigurdson, M. Boraas, and L. Goldstein

1017 **Variability of the Location of Internal Mammary Vessels and Glandular Breast Tissue in Breast Cancer Patients Undergoing Routine CT-Based Treatment Planning**
G. Bentel, L. B. Marks, P. Hardenbergh, and L. Prosnitz

GASTROINTESTINAL

1027 **Tumor Downstaging and Sphincter Preservation With Preoperative Chemoradiation in Locally Advanced Rectal Cancer: The M. D. Anderson Cancer Center Experience**
N. A. Janjan, V. S. Khoo, J. Abbruzzese, R. Pazdur, R. Dubrow, K. R. Cleary, P. K. Allen, P. M. Lynch, G. Glober, R. Wolff, T. A. Rich, and J. Skibber

1039 **Intensified Adjuvant Therapy for Pancreatic and Periampullary Adenocarcinoma: Survival Results and Observations Regarding Patterns of Failure, Radiotherapy Dose and CA19-9 Levels**
R. A. Abrams, L. B. Grochow, A. Chakravarthy, T. A. Sohn, M. L. Zahurak, T. L. Haulk, S. Ord, R. H. Hruban, K. D. Lillemoe, H. A. Pitt, J. L. Cameron, and C. J. Yeo

THORACIC

1047 Does Race Influence Survival for Esophageal Cancer Patients Treated on the Radiation and Chemotherapy Arm of RTOG #85-01?
O. E. Streeter, Jr., K. L. Martz, L. E. Gaspar, J. D. Delrowe, S. O. Asbell, M. M. Salter, and M. Roach, III

1053 Effectiveness of Accelerated Radiotherapy for Patients With Inoperable Non-Small Cell Lung Cancer (NSCLC) and Borderline Prognostic Factors Without Distant Metastasis: A Retrospective Review
L. N. Nguyen, R. Komaki, P. Allen, R. A. Schea, and L. Milas

1057 Intraoperative ^{125}I Brachytherapy for High-Risk Stage I Non-Small Cell Lung Carcinoma
A. Chen, M. Galloway, R. Landreneau, T. d'Amato, A. Colonias, S. Karlovits, A. Quinn, T. Santucci, S. Kalnicki, and D. Brown

MELANOMA

1065 Nodal Radiation Therapy for Metastatic Melanoma
J. Corry, J. G. Smith, M. Bishop, and J. Ainslie

HEAD AND NECK

1071 Consequences of Voice Impairment in Daily Life for Patients Following Radiotherapy for Early Glottic Cancer: Voice Quality, Vocal Function, and Vocal Performance
I. M. Verdonck-de Leeuw, R. B. Keus, F. J. M. Hilgers, F. J. Koopmans-van Beinum, A. J. Greven, J. M. A. de Jong, G. Vreeburg, and H. Bartelink

1079 Comparison of AJCC 1988 and 1997 Classifications for Nasopharyngeal Carcinoma
E. Özyar, F. Yildiz, F. H. Akyol, and I. L. Atahan

BRAIN

1089 Five Year Results of LINAC Radiosurgery for Arteriovenous Malformations: Outcome for Large AVMs
L. Miyawaki, C. Dowd, W. Wara, B. Goldsmith, N. Albright, P. Gutin, V. Halbach, G. Hieshima, R. Higashida, B. Lulu, L. Pitts, M. Schell, V. Smith, K. Weaver, C. Wilson, and D. Larson

PROSTATE

1107 The Effect of Androgen Deprivation on the Early Changes in Prostate Volume Following Transperineal Ultrasound Guided Interstitial Therapy for Localized Carcinoma of the Prostate
R. Whittington, G. A. Broderick, P. Arger, S. B. Malkowicz, R. D. Epperson, B. Arjomandy, and A. Kassaee

1111 The Dependence of Prostate Postimplant Dosimetric Quality on CT Volume Determination
G. S. Merrick, W. M. Butler, A. T. Dorsey, and J. H. Lief

BIOLOGY CONTRIBUTIONS

1119 Paclitaxel Sensitivity Correlates With P53 Status and DNA Fragmentation, But Not G2/M Accumulation
E. Rakovitch, W. Mellado, E. J. Hall, T. K. Pandita, S. Sawant, and C. R. Geard

1125 Maximizing Therapeutic Gain With Gemcitabine and Fractionated Radiation
K. A. Mason, L. Milas, N. R. Hunter, M. Elshaikh, L. Buchmiller, K. Kishi, K. W. Hittelman, and K. K. Ang

1137 A Comparison in Individual Murine Tumors of Techniques for Measuring Oxygen Levels
M.-C. Kavanagh, V. Tsang, S. Chow, C. Koch, D. Hedley, S. Minkin, and R. P. Hill

PHYSICS CONTRIBUTIONS

1147 Synchronizing Dynamic Multileaf Collimators for Producing Two-Dimensional Intensity-Modulated Fields With Minimum Beam Delivery Time
L. Ma, A. L. Boyer, C.-M. Ma, and L. Xing

1155 Intensity-Modulated Tangential Beam Irradiation of the Intact Breast
L. Hong, M. Hunt, C. Chui, S. Spirou, K. Forster, H. Lee, J. Yahalom, G. J. Kutcher, and B. McCormick

1165 Planning Target Volumes for Radiotherapy: How Much Margin Is Needed?
J. A. Antolak and I. I. Rosen

1171 Optimization of Planar High-Dose-Rate Implants
R. D. Zwicker, D. W. Arthur, B. D. Kavanagh, R. Mohan, and R. K. Schmidt-Ullrich

1179 Relative Dose Uniformity Assessment in Interstitial Implants
V. Y. W. Wong, T.-W. Leung, and C.-M. Wong

LETTERS TO THE EDITOR

1185 Regarding Zhang, Gu, Yin, *IJROBP* 1998;42: 928–934
X. Gao and W. Thorstad

1185 In Response to Drs. Gao and Thorstad
Z. Zhang

1185 **Neoadjuvant Chemotherapy Should Not Be the Standard of Care for Advanced Nasopharynx Cancer Center**
J. J. Beitler

1186 **In Response to Dr. Beitler**
P. Teo

1189 **Meetings and News Notes**

1193 **List of Contents, Author Index, and Subject Index for Volume 44, 1999**

V **Advertisers Index**

VI **Direct Response**